WHAT IS CLAIMED IS:

1.   A method for allocating a set of time slots belonging to a common time division multiple access (TDMA) channel to a network of transceiver nodes, the method comprising the steps of:

dividing said set of time slots into a plurality of time slot sub-sets;

defining for each transceiver node a common function that assigns one time slot sub-set of said plurality of time slot sub-sets to each point in space, wherein said each point in space is identified by a unique set of space coordinates; and

performing the following steps for each one of said transceiver nodes:

periodically identifying a set of space coordinates; and

allocating to said each one of said transceiver nodes time slots belonging to the time slot sub-set assigned by said common function to the point in space identified by the periodically identified set of space coordinates.

2.   The method of claim 1, further comprising the step of resolving time slot allocation conflicts occurring when at least two transceiver nodes of said network of transceiver nodes are allocated time slots belonging to an identical time slot sub-set and the distance between said at least two transceiver nodes is less than a predetermined distance threshold.

3.   The method of claim 2, wherein said step of resolving time slot allocation conflicts comprises the step of allocating to each one of said at least two transceiver nodes time slots belonging to a different time slot sub-set of said identical time slot sub-set.

4.   The method of claim 1, wherein the periodically identified set of space coordinates corresponds to said each one of said transceiver nodes current set of space coordinates.

5.   The method of claim 1, further comprising the step of using said set of time slots belonging to said common TDMA channel for managing communication channel resources between a plurality of nodes of said network of transceiver nodes.

6.   The method of claim 5, wherein each node of said plurality of nodes communicates on multiple channels on a time multiplex basis.

7. The method of claim 6, further comprising the steps of:

dividing each time slot of said set of time slots belonging to said common TDMA channel into a plurality of time sub-slots; and

5   designating one time sub-slot of said plurality of time sub-slots as a query time sub-slot;

wherein each source node of said plurality of nodes desiring to send data to a destination sub-set of said each source node's respective set of neighboring nodes transmits a query packet including the identifier of each node of said destination sub-set of said respective set of neighboring nodes during the query time sub-slot of an allocated time slot of said set of time slots belonging to

10   said common TDMA channel.

8. The method of claim 7, further comprising the steps of:

storing for each communicating node of said plurality of nodes:

a transmit set of time slot and channel pairs which can be used by said each communicating node to transmit data to said each communicating node's respective set of neighboring nodes; and

a receive set of time slot and channel pairs which can be used by said each communicating node to receive data from said each communicating node's respective set of neighboring nodes; and

communicating a portion of the stored time slot and channel pair data between said each source node and said destination sub-set during the subsequent time sub-slots of said allocated time slot.

9. The method of claim 8, wherein said query packet further includes a selected sub-set of said

25   transmit set of time slot and channel pairs stored for said each source node.

10. The method of claim 9, wherein said step of communicating said portion of the stored time slot and channel pair data is performed by sequentially repeating for each destination node of said destination sub-set of said each source node's said respective set of neighboring nodes the following

30   steps:

identifying by said each destination node an assignment set of time slot and channel pairs belonging to both the selected sub-set of said transmit set of time slot and channel pairs included in

said query control packet and the receive set of time slot and channel pairs stored for said each destination node;

sending by said each destination node a response packet including said assignment set of time slot and channel pairs on which said each destination node desires to receive data from said

5   each source node;

receiving by said each source node said response packet including said assignment set of time slot and channel pairs; and

sending by said each source node a confirmation packet including said assignment set of time slot and channel pairs which said each source node uses to transmit data to said each

10   destination node.

11.   The method of claim 10, wherein:

each neighboring node of said each destination node receiving said response packet identifies in the transmit set of time slot and channel pairs stored for said each neighboring node of

15   said each destination node the time slot and channel pairs belonging to said assignment set of time slot and channel pairs; and

each neighboring node of said each source node receiving said confirmation packet identifies in the receive set of time slot and channel pairs stored for said each neighboring node of said each source node the time slot and channel pairs belonging to said assignment set of time slot

20   and channel pairs.

12.   A system for allocating a set of time slots belonging to a common time division multiple access (TDMA) channel to a network of transceiver nodes, said system comprising:

means for dividing said set of time slots into a plurality of time slot sub-sets;

25   means for defining for each transceiver node a common function that assigns one time slot sub-set of said plurality of time slot sub-sets to each point in space, wherein said each point in space is identified by a unique set of space coordinates; and

means for performing the following steps for each one of said transceiver nodes:

means for periodically identifying a set of space coordinates; and

30   means for allocating to said each one of said transceiver nodes time slots belonging to the time slot sub-set assigned by said common function to the point in space identified by the periodically identified set of space coordinates.

13. The system of claim 12, further comprising means for resolving time slot allocation conflicts occurring when at least two transceiver nodes are allocated time slots belonging to an identical time slot sub-set and the distance between said at least two transceiver nodes is less than a predetermined distance threshold.

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14. The system of claim 13, wherein said means for resolving time slot allocation conflicts comprises means for allocating to each one of said at least two transceiver nodes time slots belonging to a different time slot sub-set of said identical time slot sub-set.

10   **15.** The system of claim 14, wherein the periodically identified set of space coordinates corresponds to said each one of said transceiver nodes current set of space coordinates.